European Conference on Severe Storms 2002

August 26-30, 2002
Congress Center Pruhonice, Prague, Czech Republic
Czech Hydrometeorological Institute, Satellite Department,
Na Sabatce 17, 14306 Praha 4, Czech Republic
Tel. +420-2-44033288, Fax: +420-2-44032442, e-mail: setvak@chmi.cz
http://www.chmi.cz/ECSS2002/

CDR Christopher L. Butler, USN
Office of Naval Research International Field Office - Europe
Ocean, Atmosphere and Space S&T Focus Area
223 Old Marylebone Road, London NW1 5TH
Tel. +44- 207-514-4948, Fax. +44-207-514-4980, Email: **metoc@onrifo.navy.mil**
http://www.onrifo.navy.mil

Ocean, Atmosphere and Space S&T – MetOc Conference Report 02-08
Keywords: Severe storms, hazardous weather, early warning, prediction

MM/SR - Conference Report News Headlines The European Community takes steps to establish a continental severe weather watch / warning network, a common reporting database, and a European Severe Storms Laboratory for Research.

EXECUTIVE SUMMARY OF SCIENTIFIC / TECHNICAL RESULTS

The sessions of this biannual conference were arranged on seven topics: "climatology, statistics reliability"(8 papers)," Tornadoes and downburst"(18 papers), "Flash floods, heavy rain events, hail and hailstorms, winter thunderstorms"(14 papers), "Radar and satellite observations, lightning detection"(20 papers), "Storm environment and soundings, mesoscale and synoptic-scale processes, orography"(12 papers), "Numerical modeling"(4 papers), and "Forecasting, nowcasting and warnings: Insurance claims"(7 papers). 83 papers including 54 plenary and 29 poster papers were presented at the Conference. Of note, the conference involved 117 attendees, with specialists from 38 countries. The majority of the attendees were forecasters (from national weather service agencies and universities), and insurance representatives. There were also a small number of researchers in attendance. The conference established a network of local weather experts throughout Europe; many specialized in local mesoscale and microscale phenomenon not fully understood by the U.S. S&T Community. The conference attendees validated the number of national tornadoes events taking place each year in their perspective nations (~ 650 events per year in Europe). Several pilot projects were proposed to establish a continental severe weather watch / warning network, a common reporting database, and a European Severe Storms Laboratory for Research. The American Meteorology Services (AMS) and European Meteorology Services (EMS), will play a key role in improving the specificity, accuracy, and reliability of weather forecasts for high impact weather.

SCIENTIFIC PROGRAM

For final agenda, list of lectures, titles, authors, poster/exhibition sessions see: http://www.chmi.cz/ECSS2002/program.html

TRENDS AND HIGHLIGHTS

The conference was a forum for affirmation of various severe weather phenomena. There were more forecasters than researchers present, therefore more observations than potential solutions were discussed. The authors contributing the majority of papers to this conference were from Spain (21 authors), U.S.A (19 authors), Czech Republic (12 authors), Italy (11 authors), Germany (7 authors), and the U.K. (6 authors). Based on the number of authors per session topics, R&D strengths are shown for the top 3 nations:

Session's S&T	1	2	3
1. Climatology, statistics reliability	**United States**	**Germany**	
	Germany	**Czech**	
2. Tornadoes and downburst		**Spain**	
		Italy	
3. Flash floods, heavy rain events, hail & hailstorms, winter thunderstorms	**Spain**	**France**	**United Kingdom**
		Croatia	**Czech**
4. Radar and satellite observations, lightning detection	**Spain**	**United States**	**Italy**
			Czech
	Italy	**Austria**	
5. Storm environment & soundings, mesoscale & synoptic-scale processes, orography		**Czech**	
		Netherlands	
6. Numerical modeling	**Germany**	**France**	
		Czech	
7. Forecasting, nowcasting and warnings: Insurance claims	**United Kingdom**	**Hungary**	**Spain, Netherlands, USA**
			Czech

A list of participants can be found at http://www.onrifo.navy.mil/reports/2002/ECSS2002_list_of_participants1.xls. Links to national meteorological services can be found at: http://www.chmi.cz/natserv.html.

All sessions addressed different aspects of severe storms statistics, and several special case studies. In the case of Tornadoes and waterspouts, the statistics presented were in conflict with actual observations. For example, the U.S. tornado watch and warning system recorded over 1000 tornado events per year in the U.S., and the Europeans available data records recorded approximately 100 tornado events per year, however out of 7 of 26 European Nations (Estonia, Germany, Greece, Ireland, and Portugal, Spain, and U.K.) that presented their annual statistics, each one claimed to have about 10 tornado events per year. On the other hand Russia, the largest nation on our planet is only reporting 3-4 tornado events per year. This implies that the 100 tornado events per year in Europe is grossly

underestimated, and ECCS2002 member nations were asked to compile their data to get a more realistic estimate of the number of tornado events in Europe per year. The results of the survey taken during the conference is below:

Type	Based on observational data	Estimate of "true" #
Tornadoes over land per year	170 +/- 8	281 +/- 23
Tornadoes over water per year	160 +/- 3	333 +/- 11
All tornadoes per year	330 +/- 11	614 +/- 34
USA: on average 1170 tornadoes over land per year observed		
In his 1917 book "Wind- und Wasserhosen in Europa", Alfred Wegener estimated "at least 100 tornadoes per year" in Europe, based on then available data records.		

Dr. Nikolai Dotzek of DLR (German Aerospace Center) presented a pilot project study for a "European Severe Storms Laboratory" (ESSL); to address the question if and how such an institution could mitigate the growing European threat by damage from storms. An overview of the most frequent storm phenomena in Europe shows that impacts from winter storms, warm season thunderstorm complexes or isolated severe thunderstorms with downbursts and tornadoes are not limited to the direct damage from high wind speeds. Secondary phenomena linked with these storms, such as hail, flash floods, lightning discharges, and large snow or ice masses in winter storms, have to be taken into account also to yield a complete picture. Some of the latter phenomena have a similarly high, or even higher damage potential as the mere wind phenomena of these storms alone. The illustrations below highlight the destructive power of severe storms and secondary phenomena.

Each year, hundreds of tornadoes touch down causing millions of dollars in damage, and claiming lives. The winds of a tornado are the most violent winds that occur on the earth, reaching speeds over 300 mph.

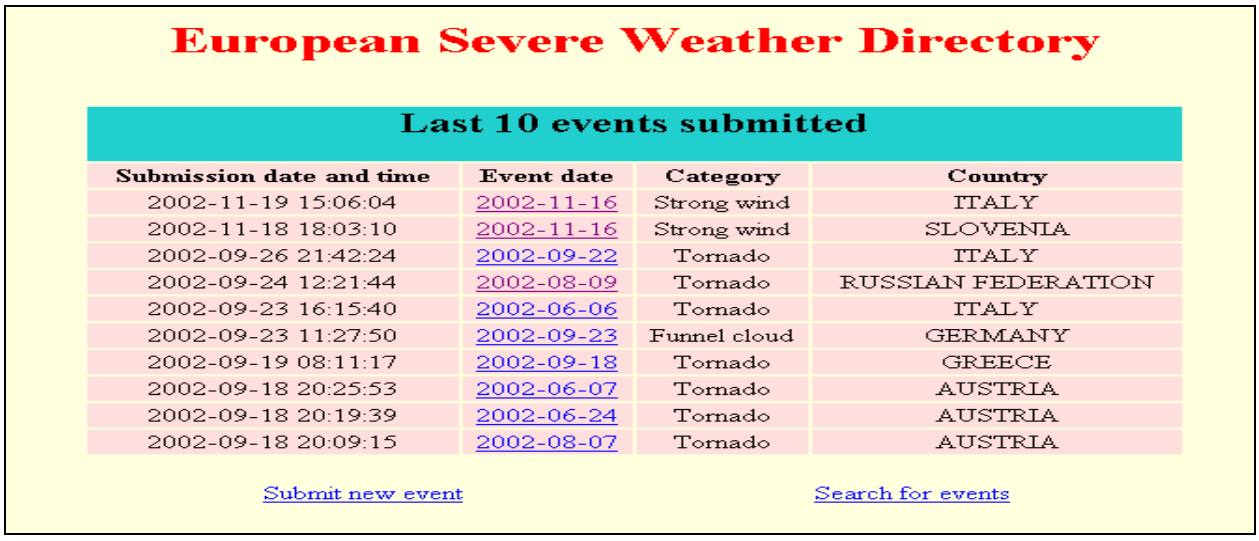


It was also reported that severe hailstorms caused 896 million dollars loss in crop damage across Europe from 1997-2001. Millions of dollars were claimed in personal property damage due to hail.



The ESSL tasks for early warning of storms and preparation of representative and accurate climatologies of damaging storm phenomena are outlined together with a 10-point plan for the foundation and setup of an ESSL. The ESSL is still at the proposal stage. Many European colleagues have indicated their interest to cooperate in working towards an ESSL, but this is still an ongoing process of negotiation. See: http://www.op.dlr.de/~pa4p/pdf/ESSL_PilotStudy.pdf for more information on this pilot study.

Fulvio Stel from Italy presented an European Severe Weather Directory / European Severe Storm database, interactive web page (www.eswd.osmer.fvg.it) to collect reports and data on severe weather phenomena occurring in Europe and Mediterranean area. The challenge of maintaining such a database will be in the use of common terms of reference, and the verification of events. Each report must have a source identified, scientific bases of the report, guidelines and a single standard for submission, and it is recommended that Europe have a single central authority group to verify and clean up the European Database (or a single point of contact per European country). Scientist interested in viewing the data, and or reporting events, can obtain a user ID and password from the page provider at the web site. See sample web page and entry below.



European Severe Weather Directory

Last 10 events submitted

Submission date and time	Event date	Category	Country
2002-11-19 15:06:04	2002-11-16	Strong wind	ITALY
2002-11-18 18:03:10	2002-11-16	Strong wind	SLOVENIA
2002-09-26 21:42:24	2002-09-22	Tornado	ITALY
2002-09-24 12:21:44	2002-08-09	Tornado	RUSSIAN FEDERATION
2002-09-23 16:15:40	2002-06-06	Tornado	ITALY
2002-09-23 11:27:50	2002-09-23	Funnel cloud	GERMANY
2002-09-19 08:11:17	2002-09-18	Tornado	GREECE
2002-09-18 20:25:53	2002-06-07	Tornado	AUSTRIA
2002-09-18 20:19:39	2002-06-24	Tornado	AUSTRIA
2002-09-18 20:09:15	2002-08-07	Tornado	AUSTRIA

Submit new event Search for events

Last events submitted - Event 4/10

Latitude (+ North, - South)	44°43'0"
Longitude (+ East, - West)	38°7'0"
Date (y-m-d)>	2002-08-09
Time (UTC, h:m)	13:00
Category	Tornado
Country	RUSSIAN FEDERATION
Location	Black sea coast of Russia, townships near city Novorossiysk: Shirokaya Balka, Dyurso, Abrau-Dyurso.
Event description	Waterspout come out to the coast.Tornado width by the ground-200m.,high-3km. Together with cyclonic heavy rainfall(5-8 aug.)the damage is: 58 persons died,broken 120 houses,53 millions $ USA.
Web page	not
Observer email	Lena@meteo.nw.ru
Date of submission	2002-09-24 12:21:44

PROCEEDINGS

The ECSS 2002 Abstracts were published (ISBN 80-85813-97-1- edition in English), and provided at the conference. Selected papers (25-30) will be submitted for publication in a special issue of the journal "Atmospheric Research". For details contact Dr. John Snow Dean, College of Geosciences, University of Oklahoma, email jsnow@ou.edu.

ASSESSMENT

ECSS2002 was a follow-up conference to the "Conference on European Tornadoes and Severe Storms" which was held during February 2000 in Toulouse, France (http://www.eurotornado.ou.edu/). The ECSS organization/focus is still in its infancy and the concept/effort is still coming together. The U.S. is leading by example, providing the methodology on establishing a European Wide, Severe Storm Watch and Warning Network. The detection, prediction, and data basing of these events, and verification / validation of community models is required to establish a Pan European observation network with the objective to improve the specificity, accuracy, and reliability of weather forecasts for high impact weather events. Such a network and warning systems would be of utility to U.S. assets located/forwarded based in overseas bases and ports around the European continent. The statistical data could also be utilized to enhance operational meteorological models, and could provide input to Naval Research Laboratory's Ports Studies and Severe Weather Handbook.

The ECSS forum will need a more substantial structure to effect change and unification of efforts. Tighter links between existing European and local research infrastructures, and a close collaboration with insurance companies, the industry, and the National Severe Storms Laboratory in the U.S.A., once established, will require a substantial effort to maintain. To ensure the future of ECSS, the organization and planning of the next series of meetings will fall under the umbrella of the European Meteorology Society (EMS). The 3rd ECSS (ECSS 2004) will be sponsored by EMS, and is tentatively scheduled for Oct/Nov 2004 in Leon Spain, at the University of Leon. Grouping this effort with the larger EMS events will provide the high level visibility necessary to accelerate progress, and affect impact on the ECSS goals. The IFO should remain an active participant in these forums.

The Office of Naval Research International Field Office is dedicated to providing current information on global science and technology developments. Our World Wide Web home page contains information about international activities, conferences, and newsletters. The opinions and assessments in this report are solely those of the authors and do not necessarily reflect official U.S. Government, U.S. Navy or ONRIFO positions.